

CLAIMS

We claim:

1. A dual motion docking apparatus for docking an electronics console to a component board in a chassis, wherein the electronics console must be mated with the component board at an angle orthogonal to a direction of installation of the electronics console, comprising:

a first docking mechanism for slidably inserting the electronics console into a chassis, such that connectors on the electronics console align with connectors on the component board; and
a second docking mechanism for laterally moving the electronics console towards the component board, such that the electronics console connectors engage the component board connectors, thereby enabling the blind docking between the electronics console and the component board.

2. The apparatus of claim 1 wherein the first docking mechanism comprises, a docking base having a longitudinal female portion, and a longitudinal male portion located on an underside of the electronics console, wherein when the electronics console is inserted into an opening in a chassis, the male portion engages the female portion of the docking base to guide the electronics console along the

docking base as the electronics console is slid into the chassis.

3. The apparatus of claim 2 wherein the electronics console includes a base plate that includes at least one key slot, and the docking base includes at least one key, wherein after the electronics console is slid into the chassis, respective keys are aligned with respective key slots.

4. The apparatus of claim 3 wherein after operation of the second docking mechanism, the keys slots on the base plate mate with the keys of the base plate to ensure that the electronics console connectors correctly align with the component board connectors when the electronics console is in a final docked position.

5. The apparatus of claim 1 wherein the second docking mechanism comprises,

a handle extending from a front of the electronics console, and
a cam mechanism, the cam mechanism having a portion that is held immobile by a docking base, wherein after the electronics console is slid into the chassis, the handle is pushed rearward by hand to actuate the cam mechanism, which then pulls the electronics console towards the component board.

6. The apparatus of claim 5 wherein the cam mechanism comprises,
a base plate supporting the electronics console,

a base plate supporting the electronics console,
a sliding plate mounted under the base plate, wherein the handle is
slidably mounted beneath the sliding plate,
multiple cam tracks on the sliding plate positioned perpendicular to the
5 longitudinal axis of the electronics console,
multiple cam tracks on the handle positioned parallel to the longitudinal
axis of the electronics console, and
multiple cams mounted to the base plate, wherein the respective cam
tracks of the sliding plate and the handle are vertically aligned, such that one
10 cam extends through one pair of aligned cam tracks.

7. The apparatus of claim 6 wherein the sliding plate includes a longitudinal
male member that engages with a longitudinal male member on a docking base,
which fixes the sliding plate in place so that the base plate of the electronics
15 console is free to move horizontally with respect to sliding plate.

8. The apparatus of claim 1 wherein the electronics console further includes
retractable lateral support members in a side opposite the component board,
wherein when the electronics console is in an undocked position, the lateral
20 support members are retracted within the side of the electronics console, and
when the electronics console is in a final docked position, the lateral support
members extend from the side to restrain the electronics console both vertical
and horizontally.

9. The apparatus of claim 1 wherein the component board is vertically mounted in the chassis in a front-to-rear orientation, and wherein the electronics console is installed into the chassis along an axis parallel to the component board.

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10. The apparatus of claim 1 wherein the electronics console comprises a central electronics console.

11. A method for docking an electronics console to a component board in a chassis, wherein the electronics console and the component board lie in the same plane of the chassis, and the electronics console must be mated with the component board at an angle orthogonal to a direction of installation of the electronics console, the method comprising:

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- (a) slidably inserting the electronics console into a chassis, such that connectors on the electronics console align with connectors on the component board; and
 - (b) providing a cam mechanism that laterally moves the electronics console towards the component board in response to a handle push, such that the electronics console connectors engage the component board connectors, thereby enabling the blind docking between the electronics console and the component board.
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12. The method of claim 11 wherein step (a) further includes,

providing a docking base having a longitudinal female portion, and
providing a longitudinal male portion under the electronics console,
wherein when the electronics console is inserted into an opening in
a chassis, the male portion engages the female portion of the
5 docking base to guide the electronics console along the docking
base as the electronics console is slid into the chassis.

13. The method of claim 12 further including the step of: providing the
electronics console includes a base plate that includes at least one key slot, and
10 the docking base includes at least one key, wherein after the electronics console
is slid into the chassis, respective keys are aligned with respective key slots.

14. The method of claim 13 wherein after operation of the can mechanism, the
keys slots on the base plate mate with the keys of the base plate to ensure that
15 the electronics console connectors correctly align with the component board
connectors when the electronics console is in a final docked position.

15. The method of claim 11 wherein step (b) further includes,
providing a handle extending from a front of the electronics console, and
20 providing a cam mechanism, the cam mechanism having a portion that is
held immobile by a docking base, wherein after the electronics console is slid into
the chassis, the handle is pushed rearward by hand to actuate the cam

mechanism, which then pulls the electronics console towards the component board.

16. The method of claim 15 further including the step of:

5 providing the cam mechanism with,
a base plate supporting the electronics console,
a sliding plate mounted under the base plate, wherein the handle is
slidably mounted beneath the sliding plate,
multiple cam tracks on the sliding plate positioned perpendicular to the
10 longitudinal axis of the electronics console,
multiple cam tracks on the handle positioned parallel to the longitudinal
axis of the electronics console, and multiple cams mounted to the base plate,
wherein the respective cam tracks of the sliding plate and the handle are
vertically aligned, such that one cam extends through one pair of aligned cam
15 tracks.

17. The method of claim 16 further including the step of providing the sliding
plate with a longitudinal male member that engages with a longitudinal male
member on a docking base, which fixes the sliding plate in place so that the
20 base plate of the electronics console is free to move horizontally with respect to
sliding plate.

18. The method of claim 11 further includes the step of:

(c) providing a retractable lateral support members in a side opposite the component board, wherein when the electronics console is in an undocked position, the lateral support members are retracted within the side of the electronics console, and when the electronics console is in a final docked position, the lateral support members extend from the side and restrain the CEC both vertical and horizontally.

19. The method of claim 11 further including the step of vertically mounting the component board in the chassis in a front-to-rear orientation, and installing the electronics console in the chassis along an axis parallel to the component board.

20. The method of claim 11 wherein the electronics console comprises a central electronics console.

21 A method for docking an electronics console to a midplane in a chassis, wherein the electronics console and the midplane lie in the same plane of the chassis, and the electronics console must be mated with the midplane at an angle orthogonal to a direction of installation of the electronics console, the method comprising:

- (a) attaching a docking base to the chassis and the midplane, the docking base having a longitudinal male portion;
- (b) providing the electronics console with,

- (i) a base plate having a longitudinal female portion,
- (ii) a sliding plate mounted beneath the base plate, the sliding plate having a plurality of cam tracks,
- (iii) an extendable handle mounted beneath the sliding plate, the handle having a plurality of cam tracks,
- (iv) cams mounted to the base plate through the cam tracks of both the sliding plate and the handle

(c) in response to an operator slidably inserting the electronics console into the chassis, causing the male portion of the sliding plate to engage the female portion of the docking base to guide the electronics console along the docking base as the electronics console is slid into the chassis, wherein the sliding plate is fixed in place; and

(d) in response to an operator pushing-in the extended handle, causing the cams and cam tracks to move the base plate and the electronics console laterally with respect to the sliding plate to engage connectors on the electronics console with connectors on the midplane.